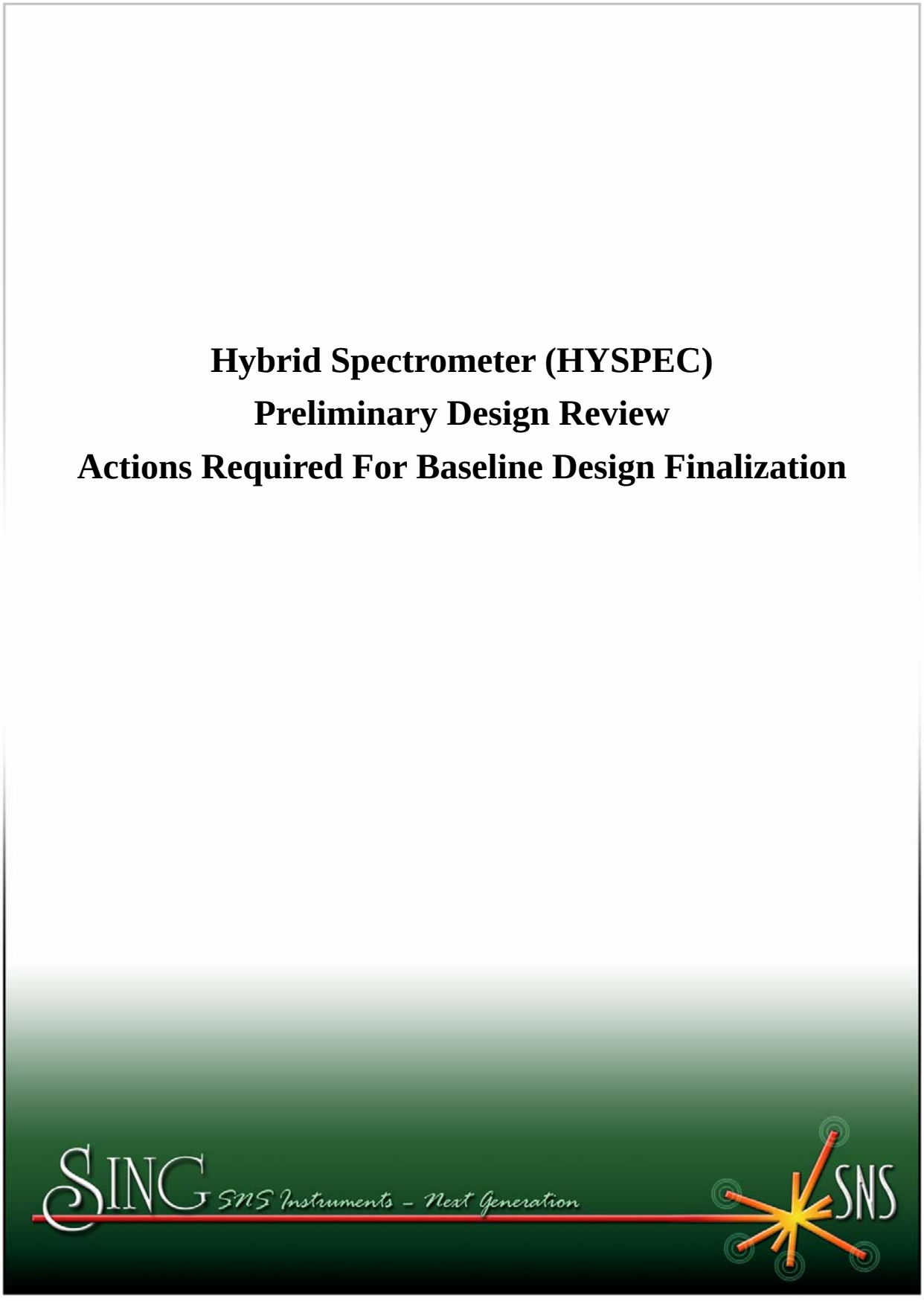
SNS SING14B-00-DE0001-R00

Date: JULY 2005

Hybrid Spectrometer (HYSPEC)
Preliminary Design Review
Actions Required For Baseline Design Finalization



Hybrid Spectrometer (HYSPEC)
Preliminary Design Review
Actions Required For Baseline Design Finalization

Original signed by 07/13/2005
Rick Allen Date

Preliminary Design Review of The Hybrid Spectrometer

Committee

Rick Allen, Chair

Don Gregory

Ken Herwig

John Jankovic

David Lousteau

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Introduction

The committee met on May 17, 2005 to review the preliminary design of the SNS Instruments – Next Generation (SING) Project Hybrid Spectrometer (HYSPEC). The committee was charged with evaluating the HYSPEC design with regard to six questions that are addressed below.

This document lists only those actions that the committee deems necessary to establish a realistic and defensible performance baseline. Further Committee recommendations are contained in SNS document SINGPRJ-20-DE0001.

Committee Findings

Question 1: Have the design requirements been adequately identified in the Design Criteria Document (DCD) and other project documents?

Note: There were no findings for this question

Question 2: Have the system interfaces been established?

Finding 2a: Constraints on the design of HYSPEC in order to provide beam access for beamline 14A must be spelled out. These have an impact on the design of the shutter insert, shielding, and the external building.

Finding 2b: HYSPEC will potentially activate material samples. The SNS central storage/check-out station for samples will be located in the target building. A means of moving activated samples from the sample area in the external building into the target building must be provided.

Finding 2c: Cryogens and other materials will normally be distributed from inside the target building. A means of moving these items into the external building must be provided.

Finding 2d: There is potential for magnetic interference with beamlines 13 and 15. An analysis must be performed to determine the magnitude of interference and identify possible mitigators.

Question 3: Is the current design status consistent with completion of preliminary design?

Finding 3a: Verify that the detectors will work in an argon environment. Have the high-voltage connections been proven in an argon environment?

Question 4: Does the design meet the performance and safety requirements?

Finding 4a: Evaluate the predicted radiation levels inside the experiment enclosure in order to determine access requirements.

Finding 4b: The tertiary shutter provides protection for personnel accessing the experiment enclosure, therefore it must interface with the SNS Personnel Protection System.

Finding 4c: Perform neutronic analysis of the tertiary shutter to determine size requirements.

Question 5: Are value engineering principles evident and are there opportunities for further VE?

Note: The committee was pleased to see ample evidence of value engineering. No findings on this question.

Question 6: Are there unresolved issues that may have significant safety, cost, schedule, or performance impacts?

Finding 6a: The design showed cooling water for the Tzero chopper coming from the target building chilled-water system. The cooling system for these choppers must be an independent, closed-loop system.

Finding 6b: Access and handling for maintenance of components in chopper box B must be developed further, especially how to transport activated components to the chopper service area, located in the target building.

Summary

The committee would like to thank the SING Project and the HYSPEC development team for their clear presentations and their candid and thoughtful discussion of questions that were

raised during the review. The committee feels that most of the design issues were addressed well and is pleased to see extensive use of value engineering principles.